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Journal of the Society of Arts.

FRIDAY, NOVEMBER 8, 1861.

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NOTICE TO MEMBERS.

The One Hundred and Eighth Session of the Society will commence on Wednesday, the 20th instant, at 8 o'clock, when Sir Thomas Phillips, F.G.S., Chairman of the Council, will deliver the opening address.

The chair will be taken at Eight o'clock on the following Wednesday evenings:—

1861. November	—	—	20	27	
„ December	4	11	18	—	
1862. January	—	—	15	22	29
„ February............	5	12	19	26	
„ March...............	5	12	19	26	
„ April	2	9	—	23	30
„ May..................	—	7	14	21	28
„ June	—	—	—	25*	

For the Meetings previous to Christmas the following arrangements have been made:—

November 20.—Opening Address by Sir Thomas Phillips, F.G.S., Chairman of the Council.

⁂ On this evening the Medals which were awarded by the Council for Papers read at the Weekly Evening Meetings during the last Session, and for articles submitted to the Society's Committees, will be distributed.

November 27.—"Comparison of the Year 1851 with the Year 1861." By Blanchard Jerrold.

December 4.—"On the Building for the International Exhibition of 1862." By Capt. William C. Phillpotts, R.E.

December 11.—"On Railway Management, from the Traveller's Point of View." By Thomas Baker, Secretary to the Royal Indian Army Sanitary Commission.

December 18.—"On the Improvements and Progress in Dyeing and Calico-Printing since 1851." By F. Crace Calvert, F.R.S.

Through the courtesy of Messrs. Kelk and Lucas, the members are invited to inspect the building for the International Exhibition of 1862, on Saturday, the 30th inst., after one o'clock, p.m. A card has been forwarded to each member, admitting himself and one friend.

INTERNATIONAL EXHIBITION OF 1862.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names as Guarantors, will make it convenient to call there and attach their signatures to the Document. Signatures for sums amounting in the aggregate to £435,800, have been attached to the Deed.

WEEKLY PROGRESS OF THE INTERNATIONAL EXHIBITION.

Now that the building is so far advanced, the progress which is being made is not so apparent as it was when less material was on the ground. Formerly a clear view might be obtained of the whole work, and any alteration or new erection was conspicuous; now it is necessary to visit every portion of the works to discover what changes have been effected.

The roof of the nave is completed throughout its entire length, with the exception of the two last ribs at each end. These will be of iron, as they form part of the support of the framework of the domes. One of them, at the east end, is fixed, and the other is being raised. All the windows of the clerestory are in their places, and glazed. The moveable scaffold having traversed the length of the nave, has been rolled back to the place where it was built, so that a view of the whole nave is obtained. The scaffolding which is intended for the erection of the iron ribs mentioned above, has been built specially for the purpose, and is, like the scaffolds beneath the transepts, stationary.

Four columns of the eastern dome have been raised as far as the point from which the ribs are to spring, and two of the windows which are to light the dome are in their places. The south-western transept has been commenced, four of the ribs of the roof being already fixed. The labourers are at work excavating the foundations of the refreshment courts, and the concrete is ready to be laid.

Turning now to the southern Picture Gallery, it will be seen that a great advance has been made since last week. The iron coping on the face fronting the Cromwell-road, and which forms, at the same time, a portion of the cornice and the gutter of the roof, has been fixed over the eastern half of the gallery, and the two towers, with their French roofs, are fast approaching completion. In the interior the carpenters have commenced the floors. On the western half of the gallery, the last principal of the roof is fixed, the angle pieces of the towers are rising above the roof, and the battens are laid on the inside.

His Excellency the Turkish Ambassador attended a meeting of Her Majesty's Commissioners last week: it is believed that, contrary to expectation, Turkey will occupy the space which was originally allotted to her. The demands from foreign countries are now beginning to come, but in most cases are so much in excess of the space at the disposal of the Commissioners, that it is necessary to refer them back again for reduction and correction.

It is proposed that machinery, photography, and education, shall form International Exhibitions, and Foreign Commissioners are requested to state in what way they wish to divide the space allotted to them among these classes.

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* The Annual General Meeting: the Chair will be taken at Four o'clock. No Visitors are admitted to this Meeting.

Her Majesty's Commissioners have decided that the south-western court, the galleries around it, and a small portion of the nave, shall be appropriated to the French exhibitors. The French have every reason to be satisfied with this liberal arrangement, and there is no doubt they will well fill the space allotted to them.

The following additional arrangements have been made :—

Austria.

The Austrian Government have appointed a Commission in London, of which Baron Rothschild, Consul-General for Austria, is President, and Dr. Schwarz, Chief Consular Agent for Austria in Paris, Chief Commissioner.

United States of America.

The President of the United States has appointed the following gentlemen Commissioners, to arrange the proper representation of that nation at the forthcoming Exhibition :—

Hon. William H. Seward, Secretary of State; Hon. Caleb B. Smith, Secretary of the Interior; Hon. Edward Everett, of Massachussetts; Professor Joseph Henry, Secretary of the Smithsonian Institution; Robert B. Minturn, Esq., of New York; John H. Klippart, Esq., of Ohio; G. Dawson Coleman, Esq., of Pennsylvania; James R. Partridge, Esq., of Maryland; B. P. Johnson, Esq., of New York; Richard Wallach, Esq., Mayor of Washington; Joseph C. G. Kennedy, Esq., Superintendent of the Census; William W. Seaton, Esq., of Washington; Eli Whitney, Esq., of Connecticut.

Ionian Islands.

Mr. H. Drummond Wolff, C.M.G., has been appointed Commissioner to represent the interests of exhibitors from the Ionian Islands at the coming Exhibition, and will proceed to London for that purpose.

Turkey.

An intimation has been received that Turkey will be represented in the International Exhibition.

THE BRITISH COLONIES AND THE INTERNATIONAL EXHIBITION.

By P. L. Simmonds.

No. IX.—The Australian Colonies.

There are but two other Australian colonies to touch upon—Queensland and New Zealand. The former is interesting, because it is a newly-established dependency, created since 1851, and therefore its first appearance in the International Exhibition will be watched with interest. As comparatively little is yet known of it in England and the Continent, I shall give a brief detail of its position and capabilities.

Queensland.

Under the general title of the Moreton Bay District, this territory formed the northern portion of the colony of New South Wales until December 1, 1859, when it was separated from it, and Sir G. F. Bowen was appointed the first Governor of the new colony. The present area of Queensland is estimated by the Surveyor-General at about 560,000 square miles, that is, nearly ten times the area of of England and Wales. But a larger area even than this is claimed, carrying the boundaries of the colony westward to Western Australia, and southward to South Australia. By far the largest portion of the territory is available for agricultural or pastoral purposes; and, as British emigration is being promoted by the colony, its resources and capabilities are examined and questioned with much interest. At the very commencement of its political existence, Queensland takes, in point of revenue, the twelfth place among the forty-eight dependencies of the British Crown —the revenue of last year having been £160,000. The population, which in 1851 was 10,296, has increased to 25,000. This is a small community to raise so large a revenue, especially if the lightness of the taxation be taken into consideration.

The external trade of the colony already exceeds £1,000,000 in value, and is rapidly increasing. The Governor in his latest despatches, points out that vast districts of the territory of the colony stand in the same relation to the cotton and sugar that the magnificent pastures of the interior stand to the wool manufacture of the mother country. Queensland possesses regions most favourably situated for both pastoral and agricultural pursuits, and for the growth of almost every description of the produce of temperate as well as tropical climates. Her extensive mineral resources, also, will doubtless be speedily developed.

In the Botanic Gardens at Brisbane, covering 27½ acres of land, plantations have been laid out, in which may be seen twenty varieties of the vine, twelve of the pine apple, eight of the banana, and two of orange. These have all been planted with the view of determining which were best adapted to the climate and general character of the soil. Several varieties of the cotton shrub have been tried, and the result of the experiment goes to prove that this valuable plant may be cultivated with ease, and that it needs only the introduction of an adequate supply of suitable labour to render its cultivation a profitable undertaking. Eight descriptions of this plant are now growing in the gardens, viz. :—Sea Island, Cluster, New Orleans, Honduras, Boy's Prolific, Dean's Upland, Petit Gulf, and Peruvian. All but the last succeeded well.

The sugar cane has been experimented upon during the past and previous seasons, and its thriving condition would seem to indicate that it might be grown with profit. The ginger plant and two species of arrowroot have been successfully cultivated. The coffee and tea plants, the various spices, camphor, tamarind, bread fruit, numerous palms, mangoes, and other fruits. Logwood, teak, the Argan and tallow trees have been introduced. The rice paper plant from Formosa, African hemp, the famous grass cloth plant, and many others of greater or less celebrity, are successfully cultivated, thanks to the care of Mr. Walter Hill, the director of the gardens.

After these preliminary details I come to notice briefly the part Queensland intends to take in the International Exhibition. Owing to her great distance from the mother country, the full particulars of her intended contributions are not yet to hand. Very early steps were, however, taken in the colony to secure a due representation of her productive resources, and an influential local commission appointed, which has been working most energetically for many months.

Sir George Bowen, the Governor, with the advice of his Executive Council, has also appointed the following gentlemen, connected with the Colony, to be the London Commissioners for representing Queensland at the Exhibition of 1862 :—Matthew H. Marsh, Esq., Chairman; Alfred Denison and Arthur Hodgson, Esqs.; Mr. Henry Jordan, the Emigration Agent in England, acting as Secretary. The Local Commission are making every exertion to secure for the productions of Queensland an adequate representation in the Exhibition. The sum of £2,000 has already been voted by the Legislature towards the expenses, and it is expected that this new Colony will compete creditably and with honourable rivalry even with its older neighbour and parent, New South Wales.

New Zealand.

New Zealand made but a small display in 1851, although some of her woods, minerals, fibrous materials, manufactures and native curiosities were exhibited. There were only about 40 contributors, of whom half-a-dozen were home exhibitors. Auckland was then the only province that sent a collection. In 1855, about 10 or 12 exhibitors took part in the Paris Exhibition, occupying about 117 superficial feet of space. In 1850, according to the Official Illustrated Catalogue, the population of the colony, in the five provinces, was 100,000, of whom 80,000 were natives.

The chief productions then were wheat, maize, live stock, flax, pine timber, copper, iron, sulphur, and coal. Since that period many new products have been developed, especially timber, bark, Kauri resin, gold, wool, &c.

The progress which New Zealand has made in the past ten years is remarkable, both in increase of population, extension of settlement, and, as a consequence, increase of productive resources. The white population has more than trebled, having advanced to 71,508. This increase is owing mainly to the unusual tide of immigration, especially to Auckland, Canterbury, and Otago. Since 1850 three new provinces, Hawke's Bay, Marlborough, and Southland, have been declared and added to the previous six. The land under cultivation in the colony, which in 1850 included only 22,058 acres, had increased to 156,940 acres in 1859, besides 264,776 acres of land fenced in. In 1850 the live stock in the colony, horses, cattle, and sheep, numbered only 192,776 head; in 1859 they had risen to 1,932,123. The total value of imports in 1850 was £240,205, and in 1859, £1,151,030; and the value of the exports, £115,416, and £551,484 respectively, of which £521,308 was New Zealand produce and manufactures.

The subject of the steps proposed to be taken by the Government to enable the products of New Zealand to be efficiently represented at the International Exhibition, was introduced in the House of Assembly on the 2nd of August, and it was stated that from the exertions of the Local Commissioners appointed throughout the colony, a much more favourable result might be expected than was arrived at in 1851.

A public meeting was held in the Exchange Hotel, Auckland, at the close of July, to consider the best means to be adopted for obtaining specimens of the productions of that province. Capt. Daldy, who occupied the chair, said he trusted proper steps would be taken to have the productions of the province fully represented at the International Exhibition of 1862. He hoped they would also be able to forward, in the collection from thence, specimens of the productions of some of the South Sea islands. He had written to gentlemen residing in those islands to send specimens to Auckland, and he had reason to hope that these productions would be of considerable interest at home.

Mr. Edward King, the secretary *pro tem*, in proposing the first resolution :—" That in the opinion of this meeting it is highly desirable that every effort should be made to obtain as large and full a collection as possible of the productions, &c., of this province, to forward for show as the Auckland contribution to the International Exhibition of 1862, and that the co-operation and assistance of every person should be invited in promoting the objects in view," said it was seldom an opportunity occurred for exhibiting articles of New Zealand produce, and especially those of the province of Auckland, in which they were most particularly interested. On this account many people were ignorant of the capabilities of the province, and capital and energy that might be employed in developing its resources were directed elsewhere. Even many residents in the province were ignorant of the great variety and usefulness of its productions; and it was the interest as well as duty of those whom he addressed to embrace the opportunity afforded them by the projected International Exhibition of 1862, to direct the attention of capitalists to this province. Some of the indigenous New Zealand woods, for instance, were exceedingly valuable for wood engraving, but this was not generally known, or they would go largely into consumption. Box-wood was becoming so scarce at home that one of the chief reasons for the late Mr. Herbert Ingram, of the *Illustrated London News*, travelling through Canada, was to ascertain whether any of the Canadian timber was sufficiently hard to be used as a substitute for box by the wood engravers. There was an abundance of wood in the province of Auckland suited for this purpose; and they saw from a late report in the *Southern Cross* how highly New Zealand wood was prized for furniture work. But it was not in timber alone that Auckland excelled; there was the native flax, and coal just brought to light, besides many other mineral and vegetable products that ought to find their way to the New Zealand court in the Great Exhibition. Mr. King then referred to the necessity for having properly classified specimens of their produce at the Exhibition, for he said that a gentleman from Auckland, who had been at the Paris Exhibition, told him that he was ashamed to see a few pieces of rough wood and flax thrown in a corner as specimens of New Zealand produce. No persons looked at them; and that was one result of leaving these things to private enterprise.

Mr. Whytlaw seconded the motion, which was agreed to.

The Chairman remarked, in reference to the observations made by Mr. King, that the iron sand of New Zealand was attracting very considerable attention at home, and would, no doubt, become a great source of wealth to the country. It might not be generally known that there was at present in Auckland a number of watches, the caps of which, and several parts of the works, were made from the Taranaki iron sand; and he learned that it was the opinion of some of the large houses in the watch-making trade, that this New Zealand metal, from its peculiar qualities, was likely to be largely used in the manufacture of watches. It was also contemplated by iron-masters to mix it with the Swedish steel, to improve the quality of the metal. This iron-sand was not confined to Taranaki; it existed largely in the province of Auckland. He mentioned this fact to show that there might be many valuable commodities lying under their feet in this new country, of the value and uses of which they were as yet quite ignorant. It was moved and carried,

" That the Committee appointed be instructed to place themselves in communication with any persons belonging to other provinces for the same purpose, in order that we may be able to co-operate with them in making arrangements for the Exhibition."

The following resolution was also carried:—"In the opinion of this meeting, it is desirable that a collection should be obtained from the South Sea islands to forward along with the Auckland contributions."

Mr. Probert remarked that if it was found the South Sea islanders were forming committees to forward specimens of their own productions, the Auckland committee ought to be instructed not to take any joint action with them. The productions of those islands should not be mixed up with those sent from Auckland.

The Chairman observed that he had written to a gentleman, a missionary in one of those islands, who had resided there for 20 years; and as he had considerable taste in those matters, he was sure he would send valuable specimens. He hoped, among other things, to have half a cwt. of Raratonga coffee to send to the Exhibition. They had had some of the Raratonga coffee in the Auckland market last year, and it was highly prized; and it was of vast importance to the commercial classes to make public the capabilities of the tropical islands in the South Seas. It was his opinion that those islands would yet be to New Zealand and the Australian continent, in the growth of coffee, what the West India islands were to Europe and the North American States.

Mr. Harrope agreed with the chairman as to the importance of embracing the South Sea islands in the collection to be forwarded from Auckland to the International Exhibition of 1862, and he was glad to find that that gentleman had already taken steps in the matter.

Mr. Lewis inquired whether any specimens of Fiji wool would be forwarded. He had sent a sample of it home, and it was pronounced worth 10d. per lb.

The Chairman said it was unfortunate that advantage had not been taken of the visit of Commodore Seymour, in the "Pelorus," to the Fijis and New Hebrides, as no doubt he would have co-operated with the committee. The wool and cotton grown in the Fijis were excellent in quality, and samples ought if possible to be forwarded to London.

[I may observe here that the South Sea islands will not be unrepresented. Mr. Pritchard, the British Consul at the Feejees, will show the produce of those islands under special instructions from the Foreign Office. Capt. Denham, R.N., will show a collection of articles obtained by him during the survey of the South Sea islands, in her Majesty's ship "Herald," and the Sandwich Islands will forward a good collection. They were unfortunately shut out as too late in 1851. They labour under great difficulties from their distance.]

Mr. R. Todd said several of the New Zealand trees yielded excellent dye woods, and it was a matter of great consequence at home to procure good dyes. He knew one man who had been 16 years trying to discover one particular dye, and he had not yet discovered it. He thought, therefore, that the Committee ought to take steps to show the usefulness of the indigenous woods for dyeing purposes, and with that object would move:—"That this meeting, believing that several of the New Zealand indigenous woods are valuable as dye-stuffs, instruct the committee to procure the assistance of scientific men to obtain specimens and preparations for the International Exhibition."

Mr. Whytlaw agreed with Mr. Todd as to the importance of the course suggested. It was a fact that several of the New Zealand trees contained valuable dyes, but care should be taken how they were forwarded. He might mention a circumstance regarding the *hinau*, which would show what he meant. When in Liverpool 16 years ago, a ship was advertised as containing a cargo of New Zealand dye-wood. He went on board to see what it was, and he found it was *hinau*. It turned out, however, that there was not a particle of dye-stuff in the wood, and as firewood was not required in England, the cargo was thrown overboard. Knowing that *hinau* dyed a deep black, he inquired of a scientific man why it was that the wood imported to Liverpool from New Zealand lost its dyeing properties, while it was an excellent dye-stuff there. That gentleman informed him that there were certain dyes soluble only in their own sap, and that when the wood was dried they lost their colouring properties, and that *hinau* possessed that peculiarity. On his (Mr. Whytlaw's) return to Auckland, he found a ship loading with *hinau* as dye-wood for the English market, and he took advantage of his knowledge and published an article in the *Southern Cross* calling attention to the fact. The next day he was waited on by the owner of the cargo, who, on being assured of his sincerity, sold the timber as firewood, and thus saved a heavy loss on freight. But the dye-stuff could be reduced from the wood and forwarded as a preparation. It was quite right, however, that the capabilities of the colony to supply the English market with dye-stuffs should be fully known.

The Chairman said, if the wood was cut and dried with the sap in it, the colouring matter would be retained. He knew this from the fact that when he was going to England in the ship with Dr. Martin and Mr. Brown, who were writing their books on New Zealand, he (the chairman) had manufactured ink from the dry *hinau* on board, as the supply of ink had run out.

Subscriptions are to be raised for defraying any costs or expenses which may be incurred. A Committee of twenty-six gentlemen was appointed, with power to add to their number—His Excellency the Governor being Patron, and His Honour the Superintendent Vice-Patron. Previous to forwarding the articles to London, a public exhibition of them is to be held in Auckland, before November, the proceeds arising from which are to be awarded to successful exhibitors in the several classes.

The contributions from Auckland, it is expected, will have to be sent *viâ* Sydney, and the Auckland ship owners will take them thus far free. Influential persons are to be requested to collect specimens for the Exhibition, and forward them to the Auckland Committee.

Dr. Fischer proposes to have a piece of furniture, made of New Zealand woods, forwarded for exhibition, and a subscription list had been opened to carry out the design. A fund was to be raised of from £100 to £150, to pay the prime cost of the workmanship and material; the subscribers were to be repaid in full from the proceeds of the sale, after exhibition, handing over the balance of profit, if any, to the manufacturer. The workmanship is to be entrusted to Mr. A. Seufert, Wellesley-street.

"That Auckland," observes the *Southern Cross*, "(and through this metropolitan province the entire colony) should be worthily represented at the International Exhibition of all Nations, ought to be the earnest desire of every one in this community; and the proposed plan of procuring subscriptions to be refunded, for defraying the outlay on the elaborate work of art, displaying the adaptness of New Zealand woods for furniture purposes, is among the best that could be devised for that purpose. It is proposed to manufacture an escritoire of fancy inlaid work, showing every description of workable indigenous wood; the design to be left to the artistic skill and judgment of Mr. Seufert. When it is mentioned that Mr. Seufert was the foreman of Messrs. Liestler and Co., of Vienna, under whose superintendence the magnificent gothic book-case, which was shown in the Austrian Court at the Exhibition of 1851, and which was presented to her Majesty the Queen by the Emperor of Austria, was manufactured, and that the elaborate turret wings of that book-case were of his own workmanship, those who were at the Exhibition will be fully satisfied that he is quite competent to discharge the onerous duty about to devolve on him. To those who were not fortunate enough to have traversed the aisles of the Crystal Palace of 1851, and examined, among others, the elaborate work of art just mentioned, a visit should be paid to Mr. Seufert's premises, to assure themselves of his skill. We lately saw there a circular table top, of faultless workmanship, inlaid with eleven different varieties of New Zealand wood, and forming a chess-board pattern of very elegant and chaste design. This table top is one of several already manufactured by Mr. Seufert, and has been ordered by Mr. Monro, the Speaker of the House of Representatives. We are glad to find that we possess an artistic workman, competent to the task devolving upon him at this juncture."

A short discussion arose on the necessity for an annual exhibition of agricultural produce, new inventions, and improved agricultural implements. The want of funds was stated to be the reason why the Auckland Museum had not been made to embrace specimens of every New Zealand production.

With respect to the movements of the other provinces of the colony, there are few or no details yet to hand, but the next mail or two will probably bring advices indicating their action. In Canterbury I see it stated that Mr. Nettleton, of Karapoi, was preparing a case of specimens of New Zealand woods for the Exhibition.

Numerous home contributors will come in to swell the exhibition of New Zealand produce. Thus, the Dun Mountain Copper Mining Company of Nelson will show, through their secretary here, a large and fine specimen of chromate of iron and other geological rock specimens, one entirely new. Mr. S. Levin manufactured illustrations of New Zealand furniture woods; Messrs. Moseley and Sons, cutlery made from the titanic iron sand of Taranaki, New Plymouth, &c. Mr. John Morrison, the New Zealand Government agent, will act as Commissioner in London for the exhibitors.

From the notices I have given in the series of articles already published, it will be seen how energetically our

Southern Colonies have entered the lists for competing at the International Exhibition. Unlike the Exhibition of 1851 and that at Paris in 1855, every one of the seven noble colonies there intends to put in an appearance, and the productions of our Austral empire will be nobly represented to the world.

In future papers I propose showing what the other British Possessions intend doing in this matter.

MONUMENT AT LYONS TO JACQUARD.

The monument erected by the Chamber of Commerce of Lyons, in the cemetery of Oullins, near the city, over the grave of Jacquard, the inventor of the loom for weaving figured silk, has just been inaugurated, in presence of an immense concourse of people. After the religious ceremony the Mayor of Oullins, the president of the Lyons Chamber of Commerce, and several other gentlemen addressed the assembled crowd, dwelling at great length on the benefits Jacquard's invention had conferred on the city of Lyons. The monument consists of a white marble tomb, raised several steps above the level of the ground, and sculptured with a bas-relief representing the city of Lyons crowning Jacquard's bust. Over this, in golden letters, " A. Jacquard" is inscribed. The tomb is surrounded by a handsome iron railing.

LARGE ARRIVALS OF EAST INDIA COTTON IN LIVERPOOL.

During the last few days there have been some large arrivals of East India cotton in the Mersey. On Tuesday there were no fewer than five large ships posted as having arrived from Bombay, having on board 25,461 bales of cotton. The names of the respective vessels, together with the number of bales of cotton each ship brought, are: —The City of Agra, with 4,751 bales; the East, with 5,609 bales; the Otago, with 4,990 bales; the Langdale, with 3,495 bales; and the Euroclydon, with 6,616 bales. The Langdale made the voyage home in 93 days. The quantities of East India cotton now at sea, according to late advices, are 135,694 bales against 55,812 bales for the corresponding period last year.

ON THE RELATIVE POWER OF METALS AND ALLOYS TO CONDUCT HEAT.

CONDUCTIBILITY OF MERCURY AND AMALGAMS.

By F. CRACE CALVERT, F.R.S., AND RICHARD JOHNSON, F.C.S.

The following is the second part of a paper on the " Relative Powers of Metals, Alloys, and Amalgams to conduct Heat," communicated to the Royal Society, and published in the Philosophical Transactions:—

In the former paper* (say the authors) we described our experiments upon metals and their alloys: we now give the results obtained with mercury and amalgams. The method followed in the investigations described in this paper is the same as that detailed in our former one. When the amalgams were solid, we melted and cast them in square bars, and filed them down until they were 1 c. m. square and 6 c. m. long; but when the amalgam was fluid, we introduced it into the small iron box (see former paper, *Journal*, vol. vii., p. 677) and determined its conducting power.

Before stating the results obtained with amalgams made of pure metals in equivalent and multiple quantities, we wish to draw attention to the remarkable manner in which heat is conducted by mercury.

But before entering into the details of our experiments, it is necessary that we should state that, having completed our researches some time since, we forwarded the results to the junior secretary, Professor G. G. Stokes, for presentation, when he kindly made to us the remark that mercury might be a worse conductor than we had found it to be, and that the means adopted by us were not sufficient to prevent the mass of mercury in the little iron box becoming heated through currents; and he suggested that we should tilt our apparatus, and ascertain what would be the influence of various angles on the conductibility of mercury as determined by our method. By following out this suggestion, we were led to the interesting discovery that mercury is the worst conducting metal known, when the heat is so applied as to prevent the mass becoming heated by currents.

To attain this object, we filled our little iron box with pure mercury, and having ascertained by its weight that it was quite full, we introduced one cub. cent. of it into each of the vulcanised caoutchouc vessels; we then poured 50 cub. cent. of cold water, and waited until it had arrived at the temperature of the atmosphere of the laboratory. The larger vessel was in its turn filled with 200 cub. cent. of water at 90°. The apparatus was so arranged that the large vessel, or the source of heat, was placed perpendicularly over the small one. The temperature of the large one was maintained at 90° during one quarter of an hour by a small jet of steam brought into it (for further details see the former paper), when we obtained the following results:—

	Temperature of the 75 cub. cent. at the beginning of experiment.	Temperature of 75 cub. cent. at end of 15 minutes.	Conductibility found reduced to 50 cub. cent. water.	Mean.	Silver 1,000.
	Deg.	Deg.			
Mercury vertical	14.8	16·0	1·80	1·7	54
	12·6	13·7	1·65		

We also tilted the apparatus and gave it gradually different angles, and the conductibility of heat by mercury gradually decreased as the angle increased, showing the following results:—

		Silver 1,000.
At a slight angle................	13·5	423
Angle slightly increased......	7·3	229
Angle still more increased ...	6·9	216
Considerable angle............	5·1	160

Lastly, the apparatus was used as in our former experiments, the little box being placed in a horizontal position, and the results agreed with those already published; for we obtained

	Mean.		Silver 1,000.
21·6	21·63	or	679
21·8			
21·5			

There cannot, therefore, be a doubt that the supposed good conductibility of heat by mercury arose from not taking into account that mercury being a fluid, its facility to conduct heat was owing to currents. The same may be said of water; for we have observed, as is already known, that it presents a complete barrier to the conduction of heat when the source of heat is applied at the upper part of a column of water. Thus in our experiments we have found that the temperature of the water in the lower vessel did not rise one-tenth of a degree during the quarter of an hour that the water in the upper vessel was maintained at 90° C.

The bad conductibility of heat by fluids when all currents are prevented in their mass, appears to us difficult to explain by the theories of undulation or radiation; for we cannot understand why the imponderable fluid caloric should not travel equally well between the molecules in whatever way the source of heat is applied, or why the undulations should not be as rapid, nay, more rapid in a fluid than in a solid. All these difficulties disappear if we adopt the views of Mr. J. P. Joule, F.R.S., which are, that heat is conveyed in bodies by the vibrations of the solid molecules composing them.

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* See *Journal*, vol vii., pp. 677, 678.

The remarkably low conducting power of mercury presents another point of interest, as it establishes a further analogy between heat and electricity. The ratio of conductibility of these two agents by mercury, as compared with that of silver, shows such close relations when examined under the same volumes, that they deserve especial notice. Thus—

	Heat.	Electricity.
Silver	100·00	100·00
Mercury	5·33	2·12

On the Conductibility of Solid and Semi-solid Amalgams, or in which exists an excess of the Amalgamated Metal.

The amalgams belonging to this series were prepared with equivalent quantities of pure metals, and their conductibility for heat confirms the figure (54) which we now publish as representing the conductibility of mercury, silver being 1,000. In fact the observed conductibility of heat by these amalgams agrees perfectly with theoretical quantities, whilst there exists a great difference between them when we adopt 677 as representing the conductibility of mercury. The calculated numbers are obtained, as in the former paper, by multiplying the conducting powers of the respective metals by the weights, and dividing by the sum of the weights.

Amalgams of Tin.

Formula of amalgams, and per-centages.	Exterior temperature.	Temperature of the 50 cub. cent. of water before experiment.	Temperature of the 50 cub. cent. of water after 15 minutes, from 5 to 5 minutes.			Found.	Mean.	Calculated, mercury being 1·7.
	°	°	°	°	°			
Hg Sn_2 ... Hg 45·88 ... Sn 54·12 ...	15·0 14·8	14·5 14·6	18·0 18·2	20·8 20·9	23·1 23·3	8·6 8·7	8·65	8·11
Hg Sn_3 ... Hg 36·18 ... Sn 63·82 ...	15·0 15·0	15·1 15·5	18·9 19·4	21·9 22·3	24·5 25·0	9·4 9·5	9·45	9·2
Hg Sn_4 ... Hg 29·84 ... Sn 70·16 ...	14·0 15·0	13·1 14·9	16·9 18·8	20·1 21·9	22·8 24·5	9·7 9·6	9·65	9·95
Hg Sn_5 ... Hg 25·38 ... Sn 74·62 ...	16·0 16·0	14·9 15·11	19·1 19·4	22·5 22·8	25·2 25·4	10·3 10·3	10·6	10·5

Amalgams of Zinc.

Formula of amalgams, and per-centages.	Exterior temperature.	Temperature of the 50 cub. cent. of water before experiment.	Temperature of the 50 cub. cent. of water after 15 minutes, from 5 to 5 minutes.			Found.	Mean.	Calculated, mercury being 1·7.
		°	°	°	°			
Hg Zn_2 ... Hg 60.63 ... Zn 39·37 ...	...	16·0 15·3	19·6 18·9	22·8 22·2	25·6 25·1	9·6 9·8	9·70	8·97
Hg Zn_3 ... Hg 54·70 ... Zn 45·30 ...	...	16·1 17·1	19·7 20·9	23·4 24·5	26·6 27·5	10·5 10·4	10·45	10·05
Hg Zn_4 ... Hg 43·50 ... Zn 56·50 ...	...	14·3 17·5	18·4 21·0	22·1 25·2	25·4 28·4	11·1 10·9	11·00	12·08
Hg Zn_5 ... Hg 38·11 ... Zn 61·89 ...	...	17·1 16·2	22·6 21·7	27·2 26·3	31·0 30·2	13·9 14·0	13·95	13·05

Amalgams of Bismuth.

Formula of amalgams, and per-centages.	Exterior temperature.	Temperature of the 50 cub. cent. of water before experiment.	Temperature of the 50 cub. cent. of water after 15 minutes, from 5 to 5 minutes.			Found.	Mean.	Calculated, mercury being 1·7.
	°	°	°	°	°			
Hg Bi_2 ... Hg 31·82 ... Bi 68·18 ...	15·5 15·5	15·2 15·3	16·9 17·1	18·4 18·5	19·8 20·0	2·1 2·2	2·15	1·87
Hg Bi_3 ... Hg 23·86 ... Bi 76·14 ...	15·0 15·0	14·8 14·7	15·7 15·6	16·6 16·6	17·4 17·3	2·6 2·6	2·6	1·89
Hg Bi_4 ... Hg 19·03 ... Bi 80·97 ...	14·5 14·8	14·9 15·0	15·8 15·8	16·7 16·6	17·5 17·5	2·6 2·5	2·55	1·90
Hg Bi_5 ... Hg 15·82 ... Bi 84·18 ...	13·0 13·5	13·6 13·4	14·35 14·25	15·2 15·1	15·9 15·8	2·3 2·4	2·35	1·91

ON AMALGAMS WHICH CONTAIN AN EXCESS OF MERCURY.

These amalgams, also prepared in equivalent quantities, were all fluid, owing to the circumstance that the proportions per cent. of mercury predominated over those of tin, zinc, and bismuth. The condition of heat by these amalgams was therefore determined in the small iron box placed perpendicularly, and the source of heat applied at the upper part of the column; and this mode of operating has led us to observe the curious and interesting fact, that all this class of amalgams have the same, or nearly the same, conducting power, viz., from 1·9 to 2·3, although the proportions of tin vary in them from 10·52 to 22·98; those of zinc from 6·09 to 13·97; and those of bismuth from 17·55 to 34·73.

All the results obtained with these amalgams being within the limits of 1·9 to 2·3, we think it useless to give the details of the experiments.

CONDUCTIBILITY OF COMPOUND BARS.

In our former paper we described some experiments which we had made with bars composed of small cubes of copper soldered alternately with cubes of zinc, tin, and lead, having 1 c. m. of surface, and we showed that such compound bars conducted heat as indicated by theory. Since then we have pursued our researches, and have found that when compound bars are made of copper and bismuth, or of copper and antimony, then they conduct heat no longer in relation with the calculated numbers, as for instance:—

		Found.	Calculated.
No. 1 bar	3 cubes of copper, 1 cub. cent. 3 cubes of antimony, 1 cub cent.	9·45	17·32
No. 2 bar	3 cubes of copper, 1 cub. cent. 3 cubes of bismuth, 1 cub. cent.	3·40	13·25[*]

It will no doubt be remembered that we also experimented upon bars which, instead of being composed of cubes, were made of two longitudinal bars of copper, juxtaposed and soldered to two other longitudinal bars of either tin, zinc, or lead, and that all these bars conducted heat as if they had been entirely composed of pure copper, and had not contained half their bulk of tin, zinc, or lead. We have made, since those results were published, a great number of experiments with the hope of throwing some light on the above interesting fact, but we regret to say without success. We have, however, noticed a result which deserves to be recorded; it is, that a bar composed of two of bismuth and two of antimony, juxtaposed and soldered together, is the only one which conducts in the same ratio as indicated by theory; for example,—

		Found.	Calculated.
No. 3 bar	2 bars of bismuth 2 bars of antimony	3·90	3·63

We have also ascertained that the fine film of solder existing between the blades exerts no influence whatever on the proportion of heat conducted by the compound bars, for we have—

No. 4 bar soldered	2 of copper 2 of zinc	gives 26·85.
No. 5 bar, in which gutta percha was employed to keep together the four small blades	2 of copper 2 of zinc	gives 26·35.

EXTRACTS FROM THE REPORTS OF H.B.M. CONSULS.

(*Continued from page 806.*)

SAN SALVADOR: ITS FITNESS FOR COFFEE PLANTATIONS.—In consequence of the cheapness of land and of labour, and the inducements held out by the Government for the advantageous investment of capital, several foreigners, principally Frenchmen, have purchased lands and commenced the culture of coffee. A considerable amount of money is by this means being gradually brought into circulation, and the country becoming more prosperous. The cultivation of coffee is attracting general attention from the fact of the few samples of this article remitted to Europe, in order to determine its quality, having realised the highest prices both in England and in France. This, taken into consideration together with the fast increasing consumption of coffee in France, Germany, England, and the United States, and even in Central South America (the natives gradually preferring it to chocolate), and the safety of the crop, together with the cheapness of land and small cost in producing it, gives every assurance to the producers, of success in their operations, and, at the same time, holds out encouraging prospects for the prosperity of trade in general. I have also proposed to several English merchants the establishment of a coffee-planting company, which, in the present depressed and uncertain condition of mining and other operations, I am certain would return a safer and better interest on the capital invested than any other speculation. The coffee-tree is not liable to injury from insects or changes in the weather; it is easily cultivated; bears fruit for twenty-five years and upwards; and the produce is always saleable. The coffee market is never in a depressed state, and from the fact that there are few climates suitable for its culture, the probability of its increasing, rather than decreasing in value, is a matter beyond a doubt. The most important advantage to be derived from encouraging the investment of English capital in coffee-planting, is the fact that it would contribute to maintain that preponderance in the trade of Central America which we have hitherto possessed. Having in our hands the best and most productive lands, we secure the trade as effectually as if the country was our own, and reserve in our hands, on this coast, the monopoly of one of the most important and valuable articles in commerce. I have volunteered to superintend the general management, to purchase or lease the lands, and to make all the arrangements whereby a company, possessing a capital of from £50,000 to £100,000, might obtain a large tract of country suitable for the purpose. The Government of Salvador have, by a decree, exempted all the necessary labourers on a coffee estate from military conscription and from all municipal interference. They have also offered me every facility in procuring lands. According to the calculations I have made, founded on observation and experience, I consider a capital of £100,000 sufficient to purchase a tract of land capable of producing 6,000,000 trees. The amount of capital mentioned would be sufficient not only to purchase the land, but pay all expenses incurred in ditching and planting, the wages of the people employed, the erection of the houses, in fact all and every expense until the crops were gathered. The trees produce, generally, in four years after they are planted, and the first crop pays all the expenses of clearing, while the following year, or fifth, generally gives a considerable surplus for exportation. Thus, on the fifth or sixth year, at the usual and lowest estimate of 3lbs. per tree, we have a yield of 180,000 quintals, which, at 8 dollars per quintal, the current price at the ports of export, amounts to 1,440,000 dollars. To estimate the net value, we must deduct one-third for losses and expenses in clearing and preparing for market, also the interest on £100,000 for five years (the period which must elapse without receiving any returns), when the account will stand as follows; viz:—

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[*] These numbers were calculated in the same manner as in the case of alloys. It has been pointed out to us that in the case of the bars composed of different metals placed end to end, the theory of the conduction of heat leads to the following simple result:—the resistance of the whole bar, multiplied by its length, is equal to the sum of the specific resistances of the separate metals multiplied by their respective lengths, the resistance being measured by the reciprocal of the conductibility. This gives for the conductibilities of the bars Nos. 1 and 2, the reciprocal of the mean of the reciprocals of the conductibilities of the two component metals. Taking the numbers given in the former paper, copper (rolled) 26·95, antimony (mean of two) 6·485, bismuth 1·95, we thus find for bar No. 1, 10·45, for No. 2, 3·64, which do not greatly differ from the numbers given by experiment.

	Dollars.
Gross Product in five years of 6,000,000 trees .	1,440,000
Deduct one-third losses and expenses . .	480,000
,, interest for five years at 5 per cent. on £100,000 . . . £25,000 =	125,000
Net profits . . .	835,000

Equal to £167,000, which is the true estimate of the net value of the crop five or six years after planting. But even supposing that the trees yield 1½lbs. coffee each, the sum of £83,500 would be the result.

Local Currency and Exports of Chantabun, or Chantaburi.—Chantabun, on the east coast of the Gulf of Siam, is supplied from Bangkok with all the necessary foreign goods. The chief imports are grey and white shirtings and long-cloths, coloured shirtings, red cloths, sarongs, and opium. As at Bangkok, nothing can be done in the way of barter, all produce having to be paid for in hard cash. The only coin current is the tical; dollars would not be taken at any rate. There is, however, a local currency, the privilege of coining and circulating which is purchased from the Government by a Chinese merchant. It consists of flat circular lumps of coarse glass, stamped with some Chinese characters, and bearing the fictitious value of salungs and fuangs. These are used like paper money, being convertible into silver on presentation at the shop of the issuer. The exports from Chantabun are pepper, sugar, aquila wood, timber for shipbuilding, cardomoms, sticlacs, hides, horns, fish, tobacco, gamboge, ivory, rhinoceros horns, wood, oil, and coffee. Pepper ranks first among the products, both in value and quantity. The usual amount grown is 38,000 piculs, viz:—

	Piculs.
At Chantabun	25,000
Tung Yai	8,000
Royong	5,000

The cultivation is entirely carried on by Chinese immigrants. The plantations are situated, for facility of irrigation, at the base of the mountains which surround the town. The plant (*Piper nigrum*) requires great care and attention in its culture, being subject to the devouring ravages of an insect. As a preventive against this, the plant is washed constantly with a strong decoction of tobacco. The vine commences to bear when three years old, and continues to do so till twenty. The fruit is ready for the market in March. Brown sugar, of excellent quality, is grown at Chantabun. The soil of Chantabun is well adapted for the growth of coffee. Aware of this, the King of Siam, some years since, ordered that it should be extensively cultivated. From ignorance of how to tend the plant, however, the plantations have gradually been given up, and the quantity produced annually now barely suffices for the consumption by foreigners at Bangkok. The annual supply of horns and hides is very considerable; the plain of Chantabun affords excellent pasturage for cattle, and the quantity of stock kept is large. One of the most important products of the Province is the valuable timber; first in rank is that called Mai-tikien, by the Siamese, and the botanical name of which is *Metrosideros vera;* this can be produced in any quantity, and at an extremely cheap rate. It is found on the mountains, and is easily accessible. When the Siamese first commenced to become large ship owners, some years back, nearly all their vessels were built at Chantabun, the proximity to the timber forests, and the facilities for the cutting and carriage of the wood presented there, rendering the place peculiarly eligible. Mai-Tikien was nearly the only timber employed, and it is only of late years, since the supply of teak from the Northern Provinces has become larger, that it has been less used. Now, however, large quantities of this wood are cut and exported to Bangkok, where it is very generally used by foreign and Siamese ship-builders, chiefly for keel-pieces and bottoms of ships, as, when kept submerged in water, is it superior to teak. Another valuable wood is the red wood (Mai-deng of the Siamese) sometimes erroneously called rosewood. It is an extremely hard and heavy wood, of a deep red colour, susceptible of a fine polish, and well adapted for furniture. An extremely heavy timber is found also in the forest, called by the Siamese, Mai-Taklou. It is considered by them as incorruptible, and as such bears a sacred character, being much used in the construction of their temples. This corresponds to the "Nunclea Orientalis" of Lowreiro (Flora Cochin Chinensis).

Perhaps the most useful tree is that known in the Straits as the Pune. It is exceedingly plentiful, and is admirably adapted for masts and spars, as such it is much employed in the above localities. The Siamese and Cambodians, however use the tree for a different purpose, that is, for the production of oil, which is commonly known under the name of wood oil. It is used for caulking and varnishing vessels, and in the manufacture of torches so generally used by the Siamese. The method of extracting this oil is to make a deep incision in the trunk of the tree, a few feet from the base; in this a fire is kindled, and allowed to burn for some time, after which it is cleared out. The oil then commences to drop into this incision, which serves as a receptacle. As the minerals of Chantabun form no inconsiderable items in her commerce, they deserve some notice. Precious stones are found in great abundance, and might be a most profitable employment to hundreds. Rubies, sapphires, garnets, Oriental topazes, and emeralds, are the chief stones. They are all of good water. The sapphires and garnets are sold in the market at Chantabun, by the Chinese, at from 5 to 10 ticals per catty (12s. 6d. to £1 5s. per 1¾ lb.) These minerals were formerly largely exported to Bangkok, from whence they were sent principally to Java, but of late years the demand for them there has fallen off, and the collection has declined in a corresponding ratio. Large beds of coal have been discovered, but as there is no demand for this mineral it will probably be some time before an attempt is made to work them. The produce of the provinces adjoining Chantabun is conveyed thither in carts and on elephants, buffaloes, and oxen. The means of communication with the interior, by the existing roads, are far from easy, and during the rainy season impracticable. At that season, however, the dry water courses of the summer are swollen into navigable streams, and afford facilities for transport, generally availed of by the mountain tribes, who come down from the wilds to barter Cardomoms, gums, tiger-skins and bones, for salt and coarse cottons. Small junks, of from 80 to 150 tons burthen, are employed for the export of produce. The only port to which it is carried is Bangkok. The rate of freight between the two places is about 15 cents per picul. Chantabun does not appear to have been visited often by foreign ships. In 1851, the British brig "*Pantaloon*," called in there to buy a cargo, but the master was not allowed to open commercial negotiations, being told by the authorities that Bangkok was the only port open. Since the new treaty, which came into operation in April, 1856, one English vessel, the lorcha "*Speed*," visited the place, and could easily have procured a cargo had she waited; this she was unable to do, in consequence of her being under an engagement to proceed elsewhere.

Home Correspondence.

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THE PATENT OFFICE.

Sir,—Although our Patent Law has lately been much disparaged, and it has been particularly urged against it that it opens a wide door for the patenting of inventions which cannot properly and legally be patented by reason that they have already been publicly known and used, or even patented before, and much has been said about the necessity of having Boards of Examiners and scientific judges to weed the Patent List of such pseudo inventions—I have not observed that any notice has been taken of the fact that one thing which was intended to have had the effect of weeding the Patent List has been all but nullified by some counteracting force which seems difficult to discover or understand—I allude to the production, publication, and circulation of indexes, abstracts, and specifications, all which have received the attention of her Majesty's Commissioners of Patents and of the able Superintendent, Mr. B. Woodcroft, and his assistants, but they have been so "cribbed, cabined, and confined," that much that is admitted to be desirable is not provided for; and, furthermore, the principal place provided for access to these records—the Patent Office library and reading-room—is so small and ill-adapted for the purpose, that there is not sufficient space for half-a-dozen persons to pursue their researches in it, and therefore, practically, searching into the novelty of any so-called invention, is little less difficult than it was in olden time, 'ere the Patent Law of 1852 was enacted.

Again, the Patent Law has provided that opposition may be offered to the granting of improper patents, but here, too, the practical working of the Patent Law is almost a dead letter, owing to the unsatisfactory mode of conducting oppositions, and the great expense to be incurred.

From practical knowledge, I will venture to say that, if the searching for patents were made easy, searching required as a condition precedent to granting a patent, and oppositions rendered cheap and well regulated, the Patent Lists would be much weeded.

I trust that, at least, the Patent Office library will be placed on a better footing before the opening of the Exhibition of 1862, for I am sure we could not introduce any of our foreign scientific visitors to it without being put to shame and confusion.

I am, &c., F. W. CAMPIN.

Strand, November 1, 1861.

STEERING OF STEAM VESSELS.

SIR,—It is lamentable to hear, in this comparatively enlightened age, of the many accidents arising from collisions at sea and in rivers with steam-vessels—accidents that might easily be prevented.

About twelve years ago my attention was particularly drawn to this matter, from an emigrant ship, named the *John Bartlet*, being run down off Holyhead by a steamer, through which 120 unfortunate passengers and crew lost their lives. It came out in evidence on the inquest, that, although the day was foggy, yet the vessels saw each other 120 yards ahead; and notwithstanding each helmsman did his best to prevent accident, by putting his helm hard a-port, the collision was inevitable, and the sailing vessel was struck, stove in, and sank in about ten minutes, carrying down with her so many shrieking individuals.

Reflecting on the inadequacy of the helm to turn out of its course, on a sudden emergency, a large mass of matter in rapid motion, such as a modern steamer, I was led to take out a patent for steering steam-vessels by their motive power, simply by allowing each engine, or pair of engines, to work its own paddle in river navigation, or its own screw (having two) in rough seas. I showed that if a vertical shaft came up on deck from the throttle-valves, with a horizontal lever fixed to the top of the shaft, having an arrow's head at one end and a handle at the other, any boy might steer the ship by pointing the arrow the direction the ship was required to go. The movement would give more steam to one and less to the other engine or engines, and immediately the whole power on board would be employed to turn the vessel out of its course, and, if need be, the engine might be reversed, by which means a vessel might be made to turn round in the water without moving an inch forward.

Not being engaged in nautical matters myself, but believing this simple invention might be of great public utility, I not only communicated it to the Government, but to several eminent engineers and shipbuilders on the Clyde and Mersey. I showed to the former that vessels of war, being so constructed, might deliver a broadside, turn round and deliver the other whilst the first guns were being re-shotted, or might rake any other vessel of the ordinary construction, without its being able to get out of the way. For this communication I merely got thanked by the Lords of the Admiralty, but heard no more of it. The shipbuilders either turned a deaf ear, or told me they were not prepared to try experiments, and the aforesaid patent has remained a dead letter to this day—notwithstanding that hundreds of lives and hundreds of thousands of pounds' worth of property continue to be annually sacrificed—which so manifest and simple an expedient might prevent. The late disaster to the *Great Eastern* would never have happened had she been so constructed; although I never calculated that this principle could be carried out in sea-going paddle-steamers (at that time vessels were much smaller than they are built now), but having twice crossed the Atlantic in the *Great Eastern*, and witnessed the severe gale she met with on her passage out in May last, I have changed my opinion in that respect, and have no hesitation in saying that if her paddle-shaft were severed in the middle, and each pair of engines allowed to work its own paddle, she might not only be steered, but would be under perfect control in the severest weather. Although she rolls very much under certain circumstances, and did so on the occasion I have named, yet I never saw either of her paddles out of water, and the moment her course was changed a little to windward she became steady. (*Vide* report of her voyage.) Therefore it would be a very easy matter, whenever a hurricane overtakes her, and the wind happens to be dead on her beam, to put her off her course until its violence is expended. To make the matter, however, perfectly secure in sea-going paddle-steamers, it might be arranged to work the engines together or separate, at pleasure, by a clutch-box, so that if any slipping of a paddle-wheel should occur, or be apprehended by the ship being tossed in a tempestuous sea, then the engines could be coupled, and the clumsy helm resorted to for steering until the storm subsided. What I contend for is, that steering by helm should never be used except as an auxiliary in steam-ships. Vessels built with two screws might discard it altogether, or use it only in case of accident to one of the screws.

I think it a great pity that the fine iron-clad steamers now being built by our Government are not on this principle, and ask what chance they would have, or how they could possibly defend themselves against an enemy's ship constructed so as to turn in any direction? The latter, if only a small gun-boat, armed with a few heavy guns, could so place itself as to hammer away at the stern and rudder of its opponent, and in a few minutes render useless and unmanageable the beautiful and costly ships that are now the pride of Old England, and by keeping up a raking fire make them an easy prey to an inferior enemy. I believe myself that in the new era of naval warfare now dawning upon us, the victory will not be to the "strong," but to the "swift" and "easily manageable" vessels; and the nation that first excels and keeps a-head in that respect will alone be mistress of the seas. Such ships as are now building of the *Warrior* class, although an immense improvement upon the old "wooden wall" sailing vessel, are, I submit, not the kind required. Steam has done much for us, and on the superior application of that agent we must rely, rather than put our trust in steel plates. Depend upon it, our Government are on a wrong tack in the present construction of their ships. They would have no more chance against smaller ships, properly constructed, so as to sail fast and twist in any direction, than had the Spanish Armada of old against the little ships of glorious Queen Bess. Guns are now being made that will smash in the strongest iron plates, and the latter, it is already evident, will have to succumb to the projectile; therefore, one has only to imagine the destructive effect of a little wasp-like steamer, armed with a few 400 or 600 pounders, getting under the stern of our big ships, and rendering them, in a few minutes, as helpless as so many floating tubs. If our Government does not take the initiative about this steering question, they will shortly find they will be anticipated by—and our country will be at the mercy of—some foreign power, until they have retraced their steps, when it may possibly be too late. It is nonsense to say that such a thing cannnot be carried out. It can be done—and will be done. I point out this danger, and warn them that they may awake some fine morning and find out that the millions they have been expending might just as well have been thrown into the sea.

I am, &c., EVAN LEIGH.

Collyhurst Works, Miles Platting,
Manchester.

Proceedings of Institutions.

London Mechanics' Institution.—On Friday last, November 1st, Sir Thomas Phillips, F.G.S., Vice-President and Chairman of the Council of the Society of Arts, presided at the London Mechanics Institution, and distributed the prizes and certificates awarded by the Society of Arts to the successful candidates, and also a number of prizes given by the Local Board. The Chairman, in opening the proceedings, explained the object of the Society of Arts in establishing its annual examinations, and adverted to the importance of the certificates and prizes to their possessors, as testimonials of ability and industry, for which they were not beholden to personal friends, but which they had themselves fairly earned. He then stated the conditions on which the prizes and certificates were awarded, and complimented the London Mechanics' Institution and its Local Board on the important part they had taken in the examinations, and the success of their candidates from the commencement to the present time.—Mr. T. A. Reed, the Hon. Secretary of the Local Board, made a comparative statement, showing the increasingly beneficial results that had attended the Society of Arts Examinations in connection with the Institution, in stimulating the members to diligent systematic study, and providing them with the best testimonials of proficiency in the various branches of education. He stated that on three occasions the Local Board had attained prizes from the Society for the large proportion of successful candidates, and had appropriated the money, together with some voluntary donations, to the purchase of books, to be distributed as prizes among the most successful students in the principal classes of the district. He expressed his regret that that source of revenue would no longer be open to them, as the prizes to Local Boards were to be discontinued; and made an appeal to the friends of the Institute to supply the funds which would be needed to keep up the Local Board's own examination with effect. Mr. Reed stated that in 1858 twelve candidates were examined by the Local Board, eight of whom were passed, and five obtained certificates. In 1859, eleven were examined by the Local Board, nine of whom passed, and eight obtained certificates. In 1860, fifteen were examined by the Local Board, and eleven passed, all of whom obtained certificates, together with two first-class prizes and one second-class. In 1861, nineteen were examined by the Local Board, fourteen passed, and again all were successful in gaining certificates, together with two first-class prizes and one second-class. Book prizes had been awarded to five classes in 1859, seven classes in 1860, and nine classes in 1861. The Chairman then presented the certificates and prizes from the Society of Arts to the successful candidates, whose names have already appeared in the *Journal*. The book prizes awarded by the Local Board were next presented:—Arithmetic, W. J. Gadsden; chemistry, D. E. Gostling and H. K. Worth; shorthand, J. Reeson; French, J. H. Howard and H. G. Field; writing, Miss Tapping and E. W. Barnes; grammar, Miss S. M'Gregor; geography, E. Francis; landscape drawing, T. J. Clare and W. J. Le Maitre; architectural drawing, T. J. Handford and J. Le Maitre. The Chairman, the Hon. Dudley Campbell, and others, addressed the audience, pointing out the advantages of education, and the utility of such institutions as the London Mechanics' Institute, which tended to keep up and augment, by means of evening classes and mutual instruction, the information which had been acquired at school. On the motion of Mr. G. Legg, one of the successful candidates, seconded by Mr. J. Alger, a vote of thanks was accorded to the Local Board, which was acknowledged by the Rev. C. Boutell, Chairman of the Board. The proceedings were brought to a close by the usual vote of thanks to the Chairman.

Portsea Athenæum and Watt Institute.—On Tuesday, the 15th Oct., an Industrial and Fine Art Exhibition immediately connected with these united Institutes, was opened at the Queen's-rooms, Portsea. The object of the united committees, who have been unceasing in their endeavours to invest this exhibition with a degree of interest hitherto unprecedented in these parts, has been to further the welfare and general prosperity of both the Institutes with which the exhibition is immediately identified. It is hoped that by means of the exhibition the prospects of the united societies will be brightened. As far as the arrangements have as yet progressed, nothing appears to be wanting, and success for the undertaking is confidently augured. Every available requisite has been introduced, and the products, natural and artificial, of almost every clime have been collected together for the purpose of affording both amusement and instruction. The exhibition is under the immediate patronage of the Worshipful the Mayor (C. B. Hellard, Esq.); the Right Hon. Sir Francis T. Baring, Bart., M.P.; Sir James D. H. Elphinstone, Bart., M.A.; Vice-Admiral Sir H. W. Bruce, K.C.B., Naval Commander-in-Chief; Major General Lord William Paulet, C.B., Lieut.-Governor; Rear-Admiral Hon. G. Grey, Superintendent of the Dockyard; Colonel J. W. Gordon, C.B., A.D.C., Commanding Royal Engineers; and other heads of Government and other departments who, with private individuals, on being appealed to by the united committees, for the loan of objects worthy of exhibition, made a hearty and generous response. Contributions have been forwarded to the committees from almost all parts of the borough and suburbs, and space alone has been needed to arrange satisfactorily the disposal of the articles sent, and to make the second Industrial Exhibition all that its originators hoped for or designed. The contributions have not been confined to Portsmouth alone. Her Majesty the Queen has placed her name amongst the long list of contributors, and the curiosities sent by her Majesty occupy the most prominent position in the room. The Prince Consort has also forwarded contributions, as also have Sir F. T. Baring, Lord Palmerston, and others occupying distinguished positions in the country. At the inauguration there were present the Presidents of the Athenæum and Watt Institute (Major-General Whylock and Andrew Murray, Esq.), the Rev. S. Phelps (Chaplain of the dockyard), Colonel-Commandant Anderson, G. Gillman, Esq.; B. W. Carter, Esq.; W. H. Garrington, Esq.; Rev. N. S. Godfry, Incumbent; Rev. J. H. Cooke, Rev. H. Hawkes, Mr. J. Shepherd, Mr. H. Emanuel, and other gentlemen, among whom were members of the Managing Committee. The Rev. E. S. Phelps offered up a suitable prayer, after which Major-General Whylock said, that being president of the senior or elder Institution, it devolved upon him to say a little in reference to the proceedings of the day. The objects of the committee were twofold—to foster amongst all classes in the locality a taste for the beautiful in nature and art, and to convey, through objects presented to the eye, instruction to the mind. To enable the Institutions which the joint committees represented more effectually to carry out the purposes for which they were established, viz., the engaging of high class lecturers and professional artistes, and extending the Institute libraries, reading rooms, and classes.—Mr. Andrew Murray said, as President of one of the Societies, he had been requested to say a few words. The labour of collecting and arranging the articles now exhibited was undertaken and carried out by members of a committee of the two united Institutions, and through their influence, with that of their townsmen, it was that they had brought so large a collection for exhibition. It was most important to provide a sort of amusement that would not debase, but tend to elevate the human character. A pleasing feature in the general feeling for amusement was, that those species of entertainments which included wives and children were more appreciated than others in the present day.

MEETINGS FOR THE ENSUING WEEK.

MON. ...Geographical, 8½. 1. Lieut.-Col. H. A. Sarel, "Expedition to the Upper Yang-tse-Kiang, in China." 2. Capt. C. D. Cameron, F.R.G.S., "Notes, Geographical, Ethnological, Statistical, &c., on the Caucasus."
Medical, 8½. "Clinical Discussion."
TUES. ...Civil Engineers, 8. Mr. James A. Longridge, "The Hooghly and the Mutla."
Syro-Egyptian, 7½. 1. Dr. Solowicz, "Did the Egyptian Interpreters belong to the Priests or not?" 2. The Rev. B. H. Cowper, "The Metals of the Bible."
Zoological, 9.
WED. ...Royal Soc. Literature, 4½.
THURS...Philological, 8.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, October* 25*th*, 1861.]

Dated 15*th October*, 1861.

2567. W. Ross, Glasgow—Imp. in constructing taps or valves.
2568. J. Gilbert, Church-street, Old Kent-road—Imp. in endless railways.

Dated 16*th October*, 1861.

2571. J. Dixon and R. Clayton, Bradford—Imp. in the construction of railway wheels.
2573. F. B. Baker, Sherwood-street, Nottingham—Imp. in dressing or stiffening lace and other fabrics.
2576. A. V. Newton, 66, Chancery-lane—Imp. in the construction of grain and grass harvesters. (A com.)
2577. W. Biddell, Birmingham—Imp. in the manufacture of shot.
2579. J. Lister and D. Myers, Caledonian-street, Bradford—Imp. in lifting or hoisting apparatus, whereby to ensure the safety of the cage or article lifted when a rope or chain breaks, or is overwound, and in hoists generally as applied to mills, warehouses, and other buildings.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

2556. G. Twigg, Birmingham—Imp. in clasps or fastenings for stay-busks.—12th October, 1861.
2561. B. Taylor and C. Edkins, Birmingham—Imp. in porterobes or dress-suspenders, and also in apparatus for the suspension of curtains, draperies, and other articles.—14th October, 1861.
2575. J. J. Adams, New York—A new and useful imp. in the manufacture of flexible back brushes for cleaning and dusting horses and other animals.—16th October, 1861.
2580. W. Smith, Salisbury-street, Adelphi—Imp. in the apparatus for and method of increasing the illuminating power of gas. (A com.)—17th October, 1861.

[*From Gazette, November* 1*st*, 1861.]

Dated 24*th June*, 1861.

1614. R. Moore, Cannon-street West—Imp. in the construction, steering, and propelling of ships and other floating bodies and appliances adapted thereto.

Dated 25*th June*, 1861.

1618. W. E. Gedge, 11, Wellington-street, Strand—Improved means or apparatus for doubling and twisting the threads of any textile matter with any material susceptible of being carded or combed. (A com.)

Dated 28*th June*, 1861.

1656. S. Middleton and J. Wright, 42, Bridge-street, Blackfriars—Imp. in apparatus for the manufacture of boots and shoes.

Dated 18*th July*, 1861.

1807. B. Johnson, 1, Surrey-place, Kennington-park, and W. H. Anderson, White-cottage, Stockwell-place, Surrey—Imp. in pianofortes.

Dated 30*th August*, 1861.

2164. H. Lecaudey, 11, Wellington-street, Strand—Improved apparatus for succouring persons interred before life is extinct. (A com.)

Dated 2*nd September*, 1861.

2185. W. Clark, 53, Chancery-lane—Imp. in signal apparatus applicable for the prevention of railway trian collisions. (A com.)

Dated 6*th September*, 1861.

2224. M. A. F. Mennons, 39, Rue de l'Echiquier, Paris—Imp. in the application of the Archimedean screw to the production and transmission of motive power, and in the apparatus connected therewith.

Dated 7*th September*, 1861.

2239. J. Carpendale and T. Middleton, Sheffield—Imp. in means of producing raised chasing on copper, silver, and Britannia metal by the application of pressure.

Dated 13*th September*, 1861.

2282. C. Sutton, Salford—An improved method of, and apparatus for, indicating the position of sunken ships or other vessels.
2283. H. Dixon, Pendleton, and J. R. Renner, Liverpool—Imp. in the mode of, and apparatus for, carbonizing sawdust and other vegetable substances.

Dated 16*th September*, 1861.

2308. W. Stewart, Peckham—Imp. in apparatuses for supporting persons in and for enabling them to progress through the water.

Dated 18*th September*, 1861.

2323. G. White, 7A, Pancras-lane—Imp. in apparatus for filtering or purifying water or other liquids. (A com.)

Dated 24*th September*, 1861.

2382. T. Davey, Camborne, Cornwall—Imp. in the manufacture of safety fuses, parts of which are applicable to the manufacture of pipes and tubes of lead and other soft metal, gutta percha, caoutchouc, bitumen, and earthenware.

Dated 28*th September*, 1861.

2424. S. W. Rix, Beccles, Suffolk—New and improved means of attaching or fixing woodwork, ironwork, fittings, or furniture to walls or buildings. (A com.)

Dated 2*nd October*, 1861.

2457. J. A. Coffey, Providence-row, Finsbury—Imp. in engines or apparatus for obtaining the motive power of steam, water, air, gas, or fluids.
2458. R. A. Brooman, 166, Fleet-street—Imp. in the manufacture of figured colored fabrics, and in machinery employed therein. (A com.)
2460. F. Breffit, King William-street—Imp. in machinery employed in cutting hollow and solid corks.

Dated 3*rd October*, 1861.

2469. R. J. Ellershaw, Leeds—An improved machine for expressing oil.

Dated 4*th October*, 1861.

2482. T. G. Ghislin, Hatton-garden—Imp. in the treatment or preparation of certain foreign plants or vegetable substances, and of the application of the same to various useful purposes, for which horn, shell, whalebone, indurated leather, fish, skin, ivory, bone, hard wood, and compounds of india rubber or gutta percha, have hitherto been employed.

Dated 5*th October*, 1861.

2492. J. S. Collins, Liverpool—An improved apparatus for reefing and furling the sails of ships and other vessels.

Dated 7*th October*, 1861.

2505. J. C. Willsher, Petches, Essex—Imp. in the construction of combined thrashing and dressing machines.

Dated 8*th October*, 1861.

2503. H. Willis, Albany-street, Regent's-park—Imp. in the construction of organs.

Dated 9*th October*, 1861.

2514. R. W. Sievier, Guildford-street, Russell-square—Imp. in batteries for the purposes of war.
2515. I. Baggs, Green-terrace, and J. T. Parkes, Almorah-terrace, Middlesex—Certain imp. in the manufacture and treatment of india rubber and vulcanite as applied to various purposes.

Dated 10*th October*, 1861.

2535. J. Downs, Kingston-upon-Hull—Imp. in pumps and stops used for working hydraulic presses.
2539. A. English, Hatfield, Hertfordshire—Imp. in reins or apparatus for preventing harnessed horses from falling.

Dated 12*th October*, 1861.

2545. J. Clark, Glasgow—Imp. in electric telegraph apparatus.
2552. H. Nelson, Manchester—Imp. in machinery or apparatus for punching washers for throstles and other similar purposes.

Dated 14*th October*, 1861.

2557. E. R. M. V. de la Jousselandière, Nantes—Imp. in machinery for weaving cords and ropes.

Dated 15*th October*, 1861.

2569. W. E. Newton, 66, Chancery-lane—Imp. in the condensers and condensing apparatus of steam engines. (A com.)
2570. R. A. Brooman, 166, Fleet-street—Imp. in the method of, and apparatus for, propelling ships and vessels. (A com.)

Dated 16*th October*, 1861.

2572. R. A. Brooman, 166, Fleet-street—An imp. in plates for the table. (A com.)
2578. W. Clark, 53, Chancery-lane—Imp. in the means or apparatus for closing and securing mail bags and other packages. (A com.)

Dated 17*th October*, 1861.

2581. R. Hayes, Manchester—Imp. in gun and ammunition carriages.
2583. W. T. Weston, 4, Trafalgar-square—Imp. in screw wrenches.
2584. W. Welch, 27, King-street, Southsea, Portsmouth—Imp. in marine screw propellers.
2586. C. De Groote, Brussels—An improved instrument for corking bottles and other vessels.
2587. J. Tattersall, Preston—Imp. in the construction of carding engines used in the preparation of cotton and other fibrous substances for spinning.
2589. T. E. Merritt, Rochester—Imp. in apparatus for obtaining motive power.
2590. R. Aytoun, Edinburgh—Imp. in apparatus to be applied to chimneys or flues for improving the draught therein, and for preventing down draughts or the descent of smoke into apartments.

Dated 18*th October*, 1861.

2592. H. J. Distin, 9, Great Newport-street, Leicester-square—Imp. in metal musical wind instruments.
2594. J. Goucher, Worksop—Imp. in the beaters and drums used in thrashing machines.
2595. E. Peyton, Birmingham—Imp. in the frames of metal bedsteads.
2597. C. D. Abel, 20, Southampton-buildings, Chancery-lane—Imp. in apparatus for the simultaneous manufacture of white lead and vinegar. (A com.)
2598. C. H. Holt, Huddersfield—Imp. in steam engines and boilers and in apparatus connected therewith, part of which imps. is also applicable to raising and measuring fluids generally.
2600. W. Sadler, 11, Tredegar-place, Bow-road—Imp. in armour plated ships.
2601. P. Robertson, Sun-court, Cornhill—Imp. in the manufacture of cartridges. (A com.)
2603. T. W. Cowan, Greenwich—Imp. in the construction of breech-loading ordnance.
2604. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in braiding machines. (A com.)
2606. C. Cheyne, 19, Great George-street, Westminster, and T. B. Moseley, Lewisham—Imp. in the construction of apparatus for signalling on railways, by which imps. the signalling apparatus is rendered self-registering or recording, and also applicable for measuring and recording the speed of passing trains and the time of their passage, part of which imps. is applicable for recording the speed of trains where signalling is not required.

Dated 19*th October*, 1861.

2607. J. Webster, Birmingham—Imp. in manufacturing oxygen gas and obtaining certain other products.
2609. R. Mushet, Coleford, Gloucestershire—A new or improved manufacture of titanic pig metal or alloy of titanium and iron.
2610. T. Lepeinteur, Paris—Imp. in fastenings for gloves, belts, and other articles.
2611. T. Fearnley, Arcadia-street, Manningham, near Bradford—Imp. in steam hammers.
2613. J. Marshall, 10, Savile-row, St. James', Westminster—The collection, concentration, and transmission of sound, so as to facilitate the hearing thereof.
2615. J. Wainwright, Connaught-place West—Imp. in ventilating rooms and buildings.
2616. C. De Bergue, Dowgate-hill—Imp. in sleeper chairs for the permanent way of railways.
2617. W. C. Cambridge, Bristol—An imp. in the construction of harrows.
2618. F. J. Evans, Gas Works, Horseferry-road—An improved mode of and apparatus for carburetting gases for the purpose of illumination.
2619. H. Bloxam, jun., Shrewsbury—Imp. in sights for rifles and ordnance.

Dated 21*st October*, 1861.

2620. H. Lamplough, 113, Holborn-hill—Imp. in the means for igniting the wicks of candles and lamp wicks.
2621. C. McDougall, Manchester—Imp. in connecting and fastening the bands of covered steel or other materials used for crinolines.
2622. J. Smith, Bradford—Imp. in machinery or apparatus for combing cotton or other fibrous substances.
2623. J. T. Smith, Barrow-in-Furness, Lancashire—An imp. or imps in collecting the inflammable gases evolved from blast furnaces.
2627. W. E. Gedge, 11, Wellington-street, Strand—Imp. in the manufacture of flannel. (A com.)
2630. N. D. P. Maillard, Dublin—Imp. in ploughs.
2632. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in apparatus for facilitating the passage of trains up steep gradients on railways. (A com.)
2634. W. Connell, Sewardstone Mills, Essex—Imp. in machinery or apparatus for washing fabrics, yarns, wool, clothes, and other similar articles.

Dated 22*nd October*, 1861.

2635. H. Frost, Manchester—Imp. in apparatus for measuring fluids.
2637. R. Mushet, Coleford, Gloucestershire—An imp. or imps. in the manufacture of a certain metallic alloy.
2639. H. May, Tewkesbury—Imp. in goloshes.
2641. R. A. Brooman, 166, Fleet-street—Imp. in reaping machines. (A com.)

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

2669. E. Chambers, Melbourne—The use of hydraulic power for the breaking, crushing, or pulverizing of quartz, blue stone, or other stone or mineral of any description, and the use of a wrought iron lever or jaw in machines for crushing quartz or any other mineral, and the use of steel teeth and steel shield pieces for the levers or jaws in such machines.—25th October, 1861.
2683. M. A. F. Mennons, 39, Rue de l'Echiquier, Paris—Improved apparatus for ascertaining the presence and degree or cessation of vitality in the human body and in animals of the higher class, applicable to the semeiosis of health, disease, and death. (A com.)—26th October, 1861.
2686. J. L. Sicard, 4, South-street, Finsbury—An improved apparatus for purifying, measuring, and weighing grain, and oleaginous seeds.—26th October, 1861.

PATENTS SEALED.

[*From Gazette, November* 1*st*, 1861.]

October 31*st*.

1096. W. Scholes.
1098. M. Winkler.
1099. E. de Bassano and A. Brudenn.
1103. R. A. Brooman.
1107. W. Clissold.
1108. G. Mead.
1111. T. Bradshaw.
1112. G. Hayes.
1119. J, Johnson.
1134. T. Blackburn and M. Knowles.
1138. W. Johnson.
1139. W. Johnson.
1142. J. Drew.
1145. J. Burch.
1148. S. A. Beers.
1152. W. E, Gedge.
1196. H. J. Davies.
1234. A. Whyte & M. Macdonald.
1290. H. B. Barlow.
1296. W. Tasker, jun.
1304. W. E. Newton.
1350. J. H. Johnson.
1626. A. Sacré.
2056. G. T. Selby.
2072. J. Platts.
2228. E. J. Hughes.

[*From Gazette, November* 5*th*, 1861.]

November 5*th*.

1151. F. Defaye.
1158. T. Blackburn & M. Knowles.
1161. J. T. Massiaux.
1162. H. M. Nicholls.
1166. J. R. Hunt.
1168. E. Hoskins.
1170. H. Swan.
1172. C. Lenny.
1173. G. Carter
1175. J. Burch.
1178. H. Cater.
1179. I. M. Singer.
1186. L. W. Roddewig.
1188. A. L. E. Maulbon.
1190. J. F. L. Baddeley.
1195. J. Wareing.
1217. W. Clark.
1220. C. Oliver.
1223. W. Clark.
1225. J. Bullough & J. Bullough.
1231. J. H. Johnson.
1237. E. C. Kemp and T. Hall.
1240. H. Doulton.
1247. C. Stevens.
1272. J. W. Greaves.
1278. W. Clark.
1297. T. Sykes, B. C. Sykes, and J. W. Crossley.
1423. S. Moore.
1438. W. E. Newton.
1454. W. A. Sands.
1471. A. L. C. De Montagu.
1586. M. F. A. T. De Menonville.
1607. J. H. Johnson.
1684. H. B. Barlow.
1711. J. E. M. de Pradou and L. G. Lecoq.
1717. R. A. Smith.
1883. E. P. Colquhoun and J. R. Thomson.
1925. M. Merryweather and R. M. Merryweather.
1980. G. Haycraft.
1994. H. Wilde.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[*From Gazette, November* 1*st*, 1861.]

October 28*th*.

2409. W. Munro.
2420. R. W. Chandler and T. Oliver.
2628. J. Easton, sen., and C. E. Amos.

October 29*th*.

2413. W. Kirrage.

October 30*th*.

2458. J. Fowler, jun., R. Burton, and D. Greig.
2479. R. E. Pinhey and J. Wood.

[*From Gazette, November* 5*th*, 1861.]

October 31*st*.

2429. G. Davies.

November 1*st*.

2449. N. S. Dodge.
2460. E. Fielding.

November 2*nd*.

2467. R. A. Brooman.
2478. S. Davey.

LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietor's Name.	Address.
4416	Oct. 26.	The Cornet Bustle	James Blurm and Dyson Mair	34, Castle-street, Oxford-street, W.
4417	" 30.	Henry Gilbertson and Sons' Poison Bottles	Henry Gilbertson and Sons ...	40, Ludgate-hill, E.C.
4418	" 30.	Washing Machine for the Million	Jno. Kelly	Brook-lodge, Roscommon, Ireland.